

Message Text

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PAGE 01 TOKYO 04969 280313Z
ACTION OES-07

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DOE FOR MC DONALD, IA; WILLIT

STATE PASS TO NRC FOR J.D. LAFLEUR

E.O. 11652: N/A
TAGS: TECH, JA
SUBJECT: IKATA POWER STATION IN SHIKOKU

1. DURING MARCH DOE REP VISITED IKATA POWER STATION IN SHIKOKU, THE FOURTH LARGEST ISLAND IN JAPAN. SHIKOKU CONSUMES ABOUT 13 BILLION KWHRS PER YEAR OF JAPAN'S TOTAL OF ABOUT 500 BILLION. SHIKOKU HAS A TOTAL INSTALLED ELECTRICAL GENERATING CAPACITY IN SLIGHT EXCESS OF 3000MWE WHICH IS ABOUT 10PERCENT HIGHER THAN THEIR PEAK SUMMER LOAD. ABOUT 2000 MW ARE THERMAL (OIL), 450 MWE ARE HYDRO AND 566 MWE ARE NUCLEAR. IKATA 1 IS THE ONLY NUCLEAR PLANT IN SHIKOKU AT THIS TIME. IT IS A 566 MWE WESTINGHOUSE PWR WHICH WENT INTO OPERATION IN SEPTEMBER, 1977, HAS OPERATED AT 97 PERCENT AVAILABILITY FACTOR SINCE THEN, SUPPLIES ABOUT 25 PERCENT OF SHIKOKU'S ELECTRICITY DURING NORMAL PERIODS AND UP TO 60 PERCENT OF IT DURING OFF PERIODS SUCH AS NEW YEAR'S.

2. THE CONSTRUCTION PERMIT WAS APPLIED FOR IN 1972 AFTER
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PAGE 02 TOKYO 04969 280313Z

NEGOTIATIONS WERE COMPLETED WITH THE LOCAL FISHERMEN. THESE BEGAN IN 1969 AND TOOK ABOUT 3 YEARS.

3. THE CONSTRUCTION PERMIT WAS ISSUED IN 1973 AT WHICH TIME CONSTRUCTION BEGAN. CONSTRUCTION WAS COMPLETE IN FEBRUARY, 1977, AND THE PLANT WENT INTO COMMERCIAL OPERATION IN SEPTEMBER, 1977. THE NEGOTIATIONS WITH THE FISHERMEN, AS IN THE CASES OF OTHER

PLANTS WHICH USE SEA WATER FOR COOLING, HAD TO DO WITH THERMAL POLLUTION, WHICH THE JAPANESE CONSIDER TO BE A NON-ISSUE. SINCE THEY USE SEA WATER RATHER THAN RIVER WATER, THEY BELIEVE COOLING TOWERS WOULD CONSTITUTE AN UNNECESSARY EXPENSE AND CREATE UNDESIRABLE FOG ESPECIALLY IN DAMP REGIONS. THEY PREFER TO USE THE MONEY INSTEAD TO PAY "COMPENSATION" TO THE FISHERMEN, SINCE THEY BELIEVE THE PEOPLE WHO OBJECT TO THE PLANT WILL GET ACCUSTOMED TO IT AND MAY EVEN BECOME STRONG SUPPORTERS IF THERE IS SUFFICIENT INCENTIVE IN IT FOR THEM. THIS APPROACH SEEMS TO BE WORKING.

4. IN ORDER TO ASSURE THAT THE CONDENSER DISCHARGE WATER DOES NOT SIGNIFICANTLY AFFECT THE TEMPERATURE OF THE PACIFIC OCEAN THEY HAVE CONSTRUCTED A DISCHARGE POND 25 FEET DEEP AND ABOUT 150 FEET IN DIAMETER WHICH HAS EIGHT UNDERWATER OUTLETS (OF WHICH FOUR ARE CURRENTLY PLUGGED) AND OPERATES AT A HEAD OF 8 OR 10 FEET. THE TEMPERATURE OF THE WATER IN THE DISCHARGE POND IS ABOUT 7 DEGREES CENTIGRADE ABOVE SEA WATER TEMPERATURE. THE DISCHARGE WATER ENTERS THE SEA AT 25 FEET UNDER WATER AND MIXES WITH THE SEA WATER AS IT RISES. AT 300 FEET OUT IN THE OCEAN, THERE IS NO DETECTABLE TEMPERATURE DIFFERENCE FROM ANY OTHER POINT AT THAT DISTANCE FROM THE SHORE.

5. THE PLANT WAS CONTRACTED BY SHIKOKU ELECTRIC COMPANY TO MITSUBISHI AS AN "ALMOST TURNKEY" PLANT. MHI MANAGED THE CONSTRUCTION AND PURCHASED THE EQUIPMENT WHICH IS ABOUT 95 PERCENT UNCLASSIFIED

UNCLASSIFIED

PAGE 03 TOKYO 04969 280313Z

JAPANESE AND 5 PERCENT US IN ORIGIN.

6. IKATA 1 WAS EXPECTED TO BE BUILT FOR ABOUT \$300 A KILOWATT IT COST \$500 A KILOWATT. IKATA 2, WHICH HAS JUST RECEIVED ITS CONSTRUCTION PERMIT, WILL ALSO BE A 566 MWE PWR, WILL BE IMMEDIATELY ADJACENT TO IKATA 1, IS EXPECTED TO COST ABOUT \$1000 A KILOWATT, AND IS SCHEDULED TO GO INTO OPERATION IN FOUR AND A HALF YEARS. IT WILL USE THE SAME DISTRIBUTION AND OTHER FACILITIES INCLUDING THE CONDENSER WATER DISCHARGE POND, IN WHICH THE OTHER FOUR ORIFICES WILL BE OPENED TO DOUBLE THE FLOW OF WATER INTO THE SEA.

7. THE IKATA STATION IS EQUIPPED WITH A DESALTING FACILITY OPERATED OFF OF LOW TEMPERATURE DISCHARGE STEAM WHICH HAS THE CAPACITY TO PROVIDE 2000 TONS OF FRESH WATER PER DAY FOR MAKE UP WATER, GENERAL OFFICE AND PLANT REQUIREMENTS. AT PRESENT ONLY ABOUT 700 TONS PER DAY ARE USED. THIS SHOULD GO TO 1500 TONS OR SO WHEN IKATA 2 BEGINS OPERATION. MANSFIELD

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